of observed and verified fact as the chief duty of the editor of a work such as Quain, but however much one may applaud his aim it cannot be said that his style is a happy one for descriptive purposes. The following instance may be selected from p. 251, and it is by no means an isolated example:—

> "The formation of the vertebral body is brought about as follows: the notochordal sheath becomes prolonged dorso-ventrally into a kind of septum, which extends between the primitive plates and separates the loose mesenchyme, alluded to above, into a right and left moiety; at the same time the superficial layers of the intervening tissue become condensed into a continuous lamella uniting the plates and enclosing the looser tissue on each side of the septum. This enclosed tissue now becomes converted into cartilage. There are necessarily at first two chondrogenetic centres, but soon the septum becomes implicated, and the notochord is enclosed in a continuous cartilaginous ring."

Now the body of a vertebra is a very simple thing, but the reviewer, after reading and re-reading Dr. Bryce's description, has been unable to obtain a mental picture of how it is formed, and most students will find the same difficulty. The first essential of a descriptive text is that it must be clear and simple, and very frequently Dr. Bryce's text has neither of these merits. As regards the interpretation of fact and statement of theory, the editor has rightly assumed an impersonal and non-committal attitude; he leaves the reader free to make his own choice. He has given an impartial representation of the work and theories of most embryologists, with one exception; in describing the origin of primitive sex cells, not a word is mentioned of the arduous and pioneer work of Dr. Beard, of Edinburgh.

A large number of new illustrations have been added, many of those by Dr. Bryce, such as Fig. 136, showing a stage in the development of the nerve roots, being of real merit, but on the other hand it must be admitted that the illustrations prepared from photographs of sections of the embryo and fœtus are almost of no value whatsoever, for it is only the expert who can make any use of such sections, and these they have already by the score in their store cupboards. In exercising the rights of a reviewer, perhaps the many merits of this new edition have been sacrificed to an enumeration of what the reviewer regards as demerits, and it is only just to Dr. Bryce to mention in conclusion that the former far outweigh the latter.

In part i. of vol. iii. Profs. Schäfer and Symington have produced a standard work on the structure of the central nervous system. The combination of physiologist and anatomist has had the happiest result, securing at once an authoritative representation of what is known of the finer structure as well as the gross anatomy of the brain and spinal cord. The volume is richly and wisely illustrated, many of the new figures by Prof. Symington being of great merit. One has only to compare it with the corresponding volume of the last edition to realise the extraordinary progress that has been made during the last fifteen years in every part of our knowledge of the brain.

A. K.

NATURAL AND SYNTHETIC CAMPHOR.

La Canfora Italiana. By Prof. Italo Giglioli. Pp. 292. (Rome: Tipografia Nazionale di Giovanni Bertero e. C., 1908.)

THE commercial production of camphor is, at the present time, in a very interesting phase. The true camphor tree, *Cinnamomum camphora*, one of the Lauraceæ, occurs wild in eastern Asia, Formosa and Japan yielding the greater portion of the world's supply. After the Chino-Japanese War, the Japanese, by the acquisition of Formosa, gained the practical control of the total output, and camphor production was made a Government monopoly, first in Formosa, but afterwards in Japan as well. Within a short space of time camphor rose enormously in price, causing serious concern in the industries employing camphor, particularly the manufacture of celluloid, which uses up the greater portion of the world's supply.

This condition of affairs, and the possibility, as a further development, that celluloid manufacture might also become a Japanese monopoly, gave a great impetus to research with the object of preparing camphor artificially or of finding some efficient substitute. The chemists proved equal to the occasion, and camphor was prepared synthetically by using turpentine oil as a raw material, the successive products in one of the processes being the terpene pinene, pinene-hydrochloride, camphene, bornyl acetate, borneol, and finally crude camphor, which, when refined, yields camphor identical in all its properties with the natural product except that it is optically inactive, a difference, however, of no economic importance.

Not only has the synthesis of camphor been successfully accomplished, but the synthetic camphor can be prepared at a sufficiently low price to enable it to be a formidable competitor to the natural product, and it is at present a moot point as to whether the natural or artificial camphor can be produced the more cheaply. Natural camphor in the past was obtained by the destructive method of felling mature trees, cutting up the wood into chips, and subjecting these to distillation. The experiments carried out during recent years at the Royal Botanic Gardens, Ceylon, and elsewhere have shown that this is not essential, and that camphor can be obtained from the young twigs and shoots, and it is possible that by coppicing the plant instead of allowing it to assume its normal tree habit much greater yields can be obtained per acre, and the cost of production considerably reduced. Synthetic camphor, on the other hand, unless other large supplies of suitable hydrocarbons become available, will remain dependent on turpentine oil, which during recent years has shown a tendency to increase in price.

The Japanese monopoly not only encouraged researches aiming at the artificial production of camphor, but also gave a stimulus to the cultivation of the tree in other countries, the work in Ceylon already referred to being a case in point. Prof. Giglioli, in the volume under review, deals with this aspect of the question as regards Italy. Many people, asso-

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ciating the camphor tree with its close ally, the cinnamon (*Cinnamomum zeylanicum*), are inclined to regard camphor as a product of tropical, or at any rate distinctly hot, countries. As a matter of fact, it is rather a plant for subtropical and warm temperate regions, and it is noteworthy that Mr. H. N. Ridley, F.R.S., in a recent number of the Agricultural *Bulletin of the Straits Settlements and Federated Malay States,* records that the finest camphor tree he has ever seen outside Japan was one growing near Fowey, in Cornwall. The tree thrives in many parts of Italy, where the average yield of camphor from green leaves is given by Prof. Giglioli as 1·20 per cent., which is very similar to that obtained in Ceylon, and considered sufficient for commercial purposes.

Prof. Giglioli enters fully into the history of camphor, its cultivation in various parts of the world, describes the mode of extraction and preparation of the product, shows by chemical and industrial tests that camphor of good quality can be produced in Italy, and is of opinion that a successful industry there is quite feasible. Finally, it is worth noting that the book has as footnotes and in a special appendix very full bibliographic references to all aspects of the subject.

W. G. FREEMAN.

POPULAR GARDENING.

Garden Rockery: How to Make, Plant, and Manage it. By F. G. Heath. Pp. vi+173. (London: George Routledge and Sons, Ltd., 1908.) Price 1*s*.

THE object of this popularly-written book is frankly stated by the author in the preface as "to show the worn and worried man, or woman, of business how to obtain a maximum of enjoyment with a minimum of preliminary attention and consideration." It appears to be an attempt to induce those who have but little time, or inclination, for gardening, to take up a branch of that art which in our opinion demands sympathetic treatment and constant ungrudging attention to small details of cultivation.

We sympathise with any efforts that are made to popularise gardening, but it is to be feared that the contempt for high cultivation expressed in many of the author's remarks is scarcely likely to be helpful to those who may be desirous of maintaining their rockeries in a condition that will afford most pleasure to their owners. Eden may, or may not, have "yielded food and fruit not, at any rate, inferior in quality to that of our own times," but whatever may be the truth in regard to such a statement, we feel sure that, with very few exceptions, the fruits of the earth, as we know them, are much improved by cultivation, including in this term the processes of cross-breeding and selection of varieties. But the author declaims against the "vicious practice" of developing single into double flowers, or of making the naturally white flower blue, red or yellow.

> "Nature's variations in form and colour," he says, "are endless, and should suffice for the most exacting horticultural taste, without the display of cunning efforts to alter her wise disposition of form and colour."

All this, it would appear, has little to do with the making or planting of rockeries, but this book discusses such questions before asking in the third chapter "What is Rockery?" Subsequent chapters give directions as to what materials to use in the formation of a rockery, and describe how rocks are generally seen in a state of nature, whether of volcanic origin or the result of the "weathering" of exposed rocks.

A list of British ferns is given, and some of the commoner flowering plants that may be cultivated on rockeries, and the text is relieved with forty-five illustrations which have been reproduced from photographs. There are several mis-spellings in the lists, and whilst many of the terminations of the specific names appear to have been purposely brought into conformity with the recommendations of the Vienna Conference, there is no consistency in this matter.

In one of these lists *Linaria cymbalaria* is described as growing 3 inches high, but upon a rockery it is surely more useful for this species to *trail* 24 inches. The author speaks of *Primula vulgaris* as the *wild* plant, and suggests that it is the progenitor of such species as *P. farinosa, P. scotica, P. floribunda, P. auricula,* and others, but these plants are just as *wild* as *P. vulgaris,* and we are unable to discover the evidence upon which the author bases his deduction. Of *Linnaea borealis* (mis-spelt *Linnea*) the author timidly states that it is believed this plant was named after Linnæus, because it was understood to be a favourite plant of his! The plant was undoubtedly named by Gronovius, not only after the great botanist, but at his request.

FLOREAT CANADA!

Canada's Fertile Northland. Evidence heard before a Select Committee of the Senate of Canada, 1906–7. Edited by Captain E. J. Chambers. Pp. 140; with illustrations and a volume of maps. (Ottawa: Government Printing Bureau, 1908.)

WITH characteristic foresight, the Government of Canada has collected such information as is available regarding the possibilities of the northern regions of the dominion as a field for immigration. The title of these cloth-bound volumes is attractive, and certainly optimistic. The evidence of those who know the country, given with simple directness, does not emphasise its fertility, and it soon becomes obvious that a large part of the 1,637,559 square miles discussed has emerged so recently from the Glacial epoch that soils have only just begun to form. It is fair to add that a very large part remains unsurveyed and unprospected.

The handsome maps provided record geographical advances made in quite recent times, and there are still some inviting areas worthy of a Sven Hedin or a Nansen, skilled in the lore of stream and forest. For the agriculturist there are many assurances that potatoes are not cut off by frosts in summer; but the raising of wheat is naturally more precarious. Mr. Tyrrell (pp. 89–93) describes a forest-belt southwest of Hudson's Bay as suitable for agriculture, owing to the warm bright summers. "The snow

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